MEMORANDUM

INTERMOUNTAIN POWER SERVICE CORPORATION

TO: George W. Cross Page 1 of 2

FROM: Dennis K. Killian

DATE: November 3, 2003

PHIL,

SUBJECT: Approval to Install an Alstom ~~Static~~ ADJUSTABLE Classifier

STATE SOMEWHERE IN THE / ST ID THAT JUSTIFICATION OF ADJUSTABLE ~~STATIC~~ CLASSIFIERS IS BASED ON THE PREMISE THAT MAINTENANCE OF STATIONARY THROATS IS IMPRACTICABLE OR EQUIV.

We recommend installing an individual static classifier manufactured by Alstom, Inc. into a pulverizer for test purposes. Should the test prove that the classifier is beneficial, additional classifiers would be purchased and installed in the remaining pulverizers.

The adjustability of the Alstom Advance Static Classifier (ASC)provides for good fineness control of the pulverizer and is expected to improve wear, LOI and capacity. The ASC will be installed in a pulverizer with an existing set of rotating throats.

The past structural concerns with the rotating throats has been addressed with the use of weldable throats. With the anticipated increase in mill capacity of %5 to %10 with rotating throats, the addition of the ASC is warranted.

The proposed agreement with Alstom Inc., is attached. The significant terms of that proposed agreement, are summarized as follows:

1) Install, for testing purposes, one Alstom static classifier.

2) Run a performance test on the classifier for comparison with the predicted mill performance levels provided by Alstom. .

3) Should the classifiers pass the performance hurdle mentioned above, IPSC will purchase the classifer for $17,500 FOB from Alstom.

4) IPSC then has the option to purchase additional classifiers, for the other remaining pulverizers, at a price of $24,920.

AND THAT WE WILL OPTIMIZE FOR THE BEST R.T. DESIGN ASAP.

Fabrication and delivery of the Alstom classifier is quoted as 8 weeks. IPSC would install and test the classifier at the earliest opportunity.

Please sign this form below for permission to proceed with this project. Contact Phil Hailes at ext. 6438 with comments or questions.

George W. Cross
President and Chief Operations Officer

Attachment

Alstom Stack Classifier.

@ $17,444. for just one.

$24,920
x16 mills
$398,720
- 1 mill
$373,800 + labor.

122,000 lb/hr
↓ 7% increase.
130,500 lb/hr

Downspout

(122,000) @ = 854,000
(130,500) @ = 913,500

(8,500) ? $ 59,500 1/2 mill

→ Capacity vs. throughput.

17,500 Static

$25,000

Work in conjunction with rotating throat for improved mill component life.

New Bikel rotating throat is ~~42,500~~.

$30,000

$400,000

3 yrs. 4 ... 10 ... 3(?)

40 now

~~40~~ 27,000

	Static Throat	Rotating Throat
life	2 yrs.	7 yrs expected
	15 mos.	@ Bikel
	1.5 yrs. 5 x times.	

40,000

27,000 per installation

03-94926
Raytheon
Fall River

Replacement Costs.

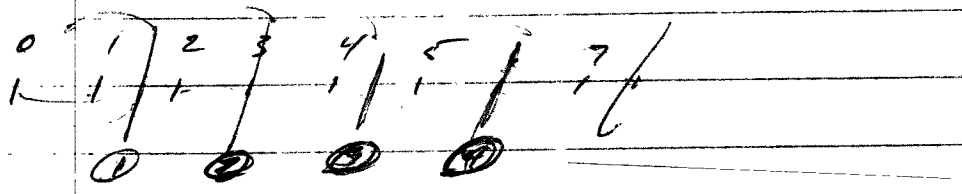
Throat	30,000
Labor	~~20,000~~
	57,000

Life:

Stationary: 1½ yr. Rot: 7.5 yrs.

5 x life.

Savings:



03-94926

$\frac{4(57{,}000)}{7.5} = 30{,}400$

~~$30,000~~

80 hrs on average to install.

80 (3 men)($40/hr) = $9,600

120 hrs (3 men)($40/hr) = (14,400)

CREW: 81 **WORK ORDER TYPE: MODIFICATIONS** 03-94926-0 **ISSUE DATE 11/07/03** **Page 1 Of 1**

Originator	: ROBERT ARCHIBALD	Schedule Date	:
Planner	: ALAN DEWSNUP	Priority	: 3A
Drawing No	: 1SGA-M2063D	Clearance	: NO
Equip No/Cat	: 1SGA--A 0	Tag Request	:
Project ID	:	Text ID	:
Shutdown	: N No Shutdown	Frequency	: NOT SCHEDULED
Ref No	: PHIL-H	Last Reading	: No Reading

Date Completed: _____ Failure Code: _____

Completed By : _____ Signature : _____

Accepted By : _____ Signature : _____

Step	Job Scope	MN	DY	Safety and Additional Information
1	ENGINEERING WO TO EVALUATE COAL PULV. FEED PIPE EXTENSION TUBES AS MEANS IN MILL PERFORMANCE IMPROVEMENT. SYNOPSIS: EVALUATE COSTS AND PERFORMANCE ISSUES TO JUSTIFY COAL FEED PIPE EXTENSION TUBES FOR THE PULV'S. FOR ADDITIONAL INFORMATION CONTACT: ROBERT ARCHIBALD DALE HURD ALAN DEWSNUP	1	1	

Alstom Static Classifier Bag # 194472

** Delay Codes Legend **
W=Whse C=CrSp T=Tag TL=Tool P=Plan Delays

** Record Time Daily **

Emp No	Date	Hours	Code/Hrs

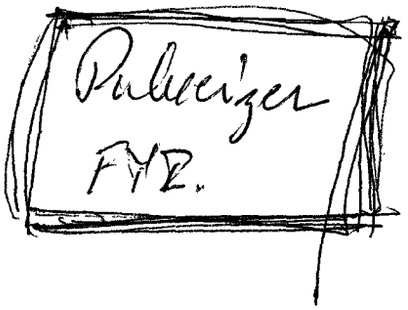
** IMPORTANT NOTICE **
YOU ARE RESPONSIBLE FOR YOUR OWN SAFETY AND MUST ENSURE THAT THE REQUIRED PPE IS WORN FOR EVERY JOB YOU ARE DOING. IF YOU HAVE ANY QUESTIONS CONCERNING THE WORK RULES, SAFETY CODES, OR REQUIRED PPE, PLEASE CONTACT YOUR SUPERVISOR.

Job Feedback/Historical Notes:

~~WO Rig# 102408~~
~~03-94926 R2~~
Alstom Static
Classifier
Coal Feed Pipe Exten

A

IP12_002657


Publicizer
FYP.

ALSTOM

FAX

Power
Customer Services

Integrated C-E Services, Inc. • Increasing Your Competitive Edge
Pulverizer Products • Fuel Piping • Burner Products • Pressure Parts • Inventory Management Programs
Component Rebuild Services • Complete Stock of Pulverizer & Burner Parts • 2 Million Feet of Tubing in Stock
Condition Assessment • Operational Audits • Performance Services • DocKit™ Equipment Assessment Software
Outage Planning • Outage Kits • On-Site Training Programs • QUICKSTUDY™ Learning Systems

To: Buck Nicklow
Fax: 435-564-6670

From: Lisa Corbitt
Tel: 303-375-8251
Fax: 303-373-4600
E-mail: lisa.a.corbitt@power.alstom.com
Date: 2-24-03

N° of pages: 2
Subject: Quotation / 313652

Attached for your review is the subject quotation as requested.

Please feel free to call with any questions you may have.

Thank you,

Lisa Corbitt

SERVICE CENTERS

NORTHEAST SOUTHEAST MIDWEST SOUTHWEST ROCKY MOUNTAIN CHATTANOOGA

ALSTOM Power Inc
2000 Day Hill Road
Windsor, CT 06095-0500
www.alstom.com

ALSTOM Power Inc.

****** QUOTATION *********

Boiler and Environmental Plant Services Division

AURORA, CO 80011

TELEPHONE: 303-375-8251

ALSTOM QUOTATION: 01313652
DATED: 02-20-03
SUPPLEMENT: 001

MATL SVCS ADMINISTRATOR: L A CORBITT
SALESMAN: F M HESS

YOUR INQUIRY NO: VERB
REQ/REL:

DATED: 02-03-03

CLIENT: INTERMOUNTAIN POWER AGENCY
850 W. BRUSH WELLMAN ROAD
DELTA, UT 84624 9546

SHIP TO:
INTERMOUNTAIN POWER CO.
850 W. BRUSH WELLMAN ROAD
DELTA, UT 84624 9546

CONTRACTS: B&WUT10007

PRICES QUOTED ARE VALID FOR ORDERS RECEIVED BY SELLER BY 04-04-03

ITEM NUMBER	QUANTITY	PART NUMBER/ CLIENT STOCK NUMBER	LEAD WEEKS	UNIT PRICE	EXTENDED PRICE
001-0	1		8	$24920.00	$24920.00

ADVANCED STATIC CLASSIFIER FOR
MPS 89G INCLUDING CONE EXTENSION
AND GANGED CLASSIFIER SHAFTS
REUSE EXISTING CONE

EST UNIT WEIGHT:

EST POINT/SHIPMENT: CONCORDIA, KS

PROVIDING A COMPLETE PORTFOLIO OF BOILER AND ENVIRONMENTAL PRODUCTS AND SERVICES FOR ALL EQUIPMENT BRANDS

FEEDER EQUIPMENT PULVERIZERS FUEL PIPING BURNER SYSTEMS
PRESSURE PARTS FABRICATED PRODUCTS ASH HANDLING PLANT GEARBOXES
OUTAGE PLANNING CONDITION ASSESSMENTS FIELD SERVICES
INVENTORY MANAGEMENT COMPONENT REBUILDS REGIONAL SERVICE CENTERS

VISIT OUR WEBSITE AT
WWW.SERVICE.POWER.ALSTOM.COM

THE PRICING ON THIS QUOTATION IS BASED ON THE QUANTITY OF EACH ITEM. ANY CHANGE IN QUANTITY MAY NECESSITATE A CHANGE IN PRICE.

TOTAL PRICE: $24920.00

FINAL PAGE

MEMORANDUM

INTERMOUNTAIN POWER SERVICE CORPORATION

TO: George W. Cross

FROM: Dennis K. Killian

DATE: November 3, 2003

SUBJECT: Approval to Install an Alstom Static Classifier

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The past structural concerns with the rotating throats has been addressed with the use of weldable throats. With the anticipated increase in mill capacity of %5 to %10 with rotating throats, the addition of the ASC is warranted.

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1) Install, for testing purposes, one Alstom static classifier.

2) Run a performance test on the classifier for comparison with the predicted mill performance levels provided by Alstom. .

3) Should the classifiers pass the performance hurdle mentioned above, IPSC will purchase the classifer for $17,500 FOB from Alstom.

4) IPSC then has the option to purchase additional classifiers, for the other remaining pulverizers, at a price of $24,920.

Fabrication and delivery of the Alstom classifier is quoted as 8 weeks. IPSC would install and test the classifier at the earliest opportunity.

Please sign this form below for permission to proceed with this project. Contact Phil Hailes at ext. 6438 with comments or questions.

_____

George W. Cross
President and Chief Operations Officer

Attachment

JOB NO: IGS03 W.O. # 23048

TITLE: Alstom Static Classifier for MPS 89 Mills

DESCRIPTION: Purchase and install adjustable static classifiers for all of the pulverizers.

JUSTIFICATION: ECONOMIC

RATE OF RETURN:	73 %
PAYBACK PERIOD:	1.41 years
BENEFIT/COST RATIO:	5.88
ECONOMIC LIFE:	10 years
PV SAVINGS:	$3,075,749
SALVAGE VALUE:	$0

ADDITIONAL DETAIL:

The adjustability of the static classifier will provided for improved fineness control. In conjunction with the use of rotating throats, it is expected that mill component life will likewise improve with the improved fineness control.

The expected savings alone from the improved life of mill throats can be used to justify this project. The savings are calculated from the combined use of the classifier and rotating throats. This combination greatly improved throat life (conservatively, a 5 times life improvement).

Additional savings, not included in the calculations, can be expected due to the improved fineness and the subsequent decrease in LOI's. This would lead to additional sales of flyash due to lower levels of LOI.

A 10- year economic life of the classifier has been used for the savings calculations.

COST ESTIMATE:

	2003-2004	2004-2005
Engineering Labor	$	$ 0
IPSC Labor	$ 115,200	$ 115,200
Contractor Labor	$ 0	$ 0
Material	$ 200,000	$ 200,000
Job Total	$ 315,200	$ 315,200

ALTERNATIVES:

EFFECT OF DEFERRAL: No improvement in fineness control.

PROJECT HISTORY: A single Alstom static classifier, will initially be purchased to confirm the viability of this component in our facility.

IGS03 - XXX Alstom Static Classifier
Economic Justification Calculations

Summary
PV of Proje [redacted]
Benefit/Co:
Payback P:
Total Retu:
Internal Ra

Initial Capital Expenditures w/Project (-$)	$ (630,400)	*This is the cost of completing the capital project Outgoing money is negative*
Initial Capital Savings w/Project (+$)	$ -	*This is the immediate (Time = 0) savings that the capital project will create Incoming (i e saved) money is positive*
Total Initial Capital Savings or Costs w/Project (+/-$)	$ (630,400)	*This is the net gain/loss of money at Time = 0, if the capital project is completed*
Annual Expected Maintenance Expenses w/Project (-$)	$ -	*This is the annual maintenance costs that are expected after the capital project is completed*
Annual Maintenance/Operations Expenses w/o Project (-$)	$ (446,400)	*This is the annual maintenance costs that are occuring without the capital project*
Annual Maintenance Savings w/Project (+/-$)	$ 446,400	*This is the annual net gain or loss of money if the project is completed*
O & M Escalation (%)	[redacted]	
Cost of Capital (%)		

Breakdown of the Values Used in the Above Calculations

Initial Capital Expenditures w/Project

Engineering Labor	[redacted]	$14,400 = (3 weeks)(3 men)($40/hr)
IPSC Labor		
Contract Labor		
Material		$25,000 Stated cost of classifier by Alstom
Total	$ 630,400	

Initial Capital Savings w/Project

$ -

[redacted]

Annual Expected Maintenance Expenses w/Project (-$)

$ 40,000 — Estimate high at $5,000 per mill per yr to maintain the classifier

Annual Maintenance/Operations Expenses w/o Project

Reduced throat wear savings	[redacted]	$30,400 = 4($57,000)/7 5 $57,000 = $30,000 + $27,000 $30,000 is general throat cost $27,000 is estimated labor cost to install a new throat 4 is the est number of saved throat changeouts in a 7 5 year period This drives to an annual savings of $30,400 in throat changeouts
Saved	$ 486,400	

Downtime Saved

Not Determined $ -

[redacted]

	Time Period	Capital	PV Capital	Annual Maint Savings w/Esc	PV Maint Costs
Capital at Time = 0	0	$ (630,400)	$ (630,400)		
	1			$ 446,400	$ 420,973
	2			$ 459,792	$ 408,905
	3			$ 473,586	$ 397,182
	4			$ 487,793	$ 385,795
	5			$ 502,427	$ 374,735
	6			$ 517,500	$ 363,992
	7			$ 533,025	$ 353,557
	8			$ 549,016	$ 343,421
	9			$ 565,486	$ 333,576
10 Year Life of Project	10			$ 582,451	$ 324,013
Present Value Totals		-	[redacted]	-	[redacted]

Internal Ra [redacted]
Guess 90

MEMORANDUM

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Draft

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George W. Cross
President and Chief Operations Officer

Attachment

IGS03 - XXX Alstom Static Classifier
Economic Justification Calculations

Draft

Summary	
PV of Proje	$1,535,290
Benefit/Co	3.44
Payback P	1.30
Total Retur	244%
Internal Ra	75%

Initial Capital Expenditures w/Project (-$)	$ (630,400)	*This is the cost of completing the capital project Outgoing money is negative.*
Initial Capital Savings w/Project (+$)	$ -	*This is the immediate (Time = 0) savings that the capital project will create. Incoming (i.e. saved) money is positive.*
Total Initial Capital Savings or Costs w/Project (+/-$)	$ (630,400)	*This is the net gain/loss of money at Time = 0, if the capital project is completed.*
Annual Expected Maintenance Expenses w/Project (-$)	$ -	*This is the annual maintenance costs that are expected after the capital project is completed.*
Annual Maintenance/Operations Expenses w/o Project (-$)	$ (486,400)	*This is the annual maintenance costs that are occuring without the capital project.*
Annual Maintenance Savings w/Project (+/-$)	$ 486,400	*This is the annual net gain or loss of money if the project is completed.*
O & M Escalation (%)	4%	
Cost of Capital (%)	10%	

Breakdown of the Values Used in the Above Calculations

Initial Capital Expenditures w/Project

Engineering Labor	$ -	
IPSC Labor	$ 14,400	$14,400 = (3 weeks)(3 men)($40/hr)
Contract Labor	$ -	
Material	$ 25,000	$25,000 Stated cost of classifier by Alstom
XXX	$ -	
Total	$ 630,400	

Initial Capital Savings w/Project

$ -	
$ 630,400	

annual expenses

Annual Expected Maintenance Expenses w/Project (-$)
Consider No Change $ -

Annual Maintenance/Operations Expenses w/o Project

Reduced throat wear savings	$ 30,400	$30,400 = 4($57,000)/7 5 $57,000 = $30,000 + $27,000 $30,000 is general throat cost $27,000 is estimated labor cost to install a new throat 4 is the est number of saved throat changeouts in a 7 5 year period This drives to an annual savings of $30,400 in throat changeouts
XXX	$ -	
Saved	$ 486,400	

Downtime Saved

Not Determined	$ -
	$ 486,400

Capital at Time = 0

Time Period	Capital	PV Capital	Annual Maint Savings w/Esc	PV Maint Costs
0	$ (630,400)	$ (630,400)		
1			$ 486,400	$ 458,695
2			$ 500,992	$ 445,545
3			$ 516,022	$ 432,772
4			$ 531,502	$ 420,365
5 Year Life of Project 5			$ 547,447	$ 408,314
Present Value Totals	-	$ (630,400)	-	$ 2,165,690

change to 10 years.

Internal Ra	75%
Guess	10

JOB NO: IGS03 W.O. # 23048

TITLE: Alstom Static Classifier for MPS 89 Mills

DESCRIPTION: Purchase and install adjustable static classifiers for all of the pulverizers.

JUSTIFICATION: ECONOMIC

Draft

RATE OF RETURN:	75 %
PAYBACK PERIOD:	1.3 years
BENEFIT/COST RATIO:	3.44
ECONOMIC LIFE:	5 years
PV SAVINGS:	$1,535,290
SALVAGE VALUE:	$0

ADDITIONAL DETAIL:

The adjustability of the static classifier will provided for improved fineness control. In conjunction with the use of rotating throats, it is expected that mill component life will likewise improve with the improved fineness control.

The expected savings alone from the improved life of mill throats can be used to justify this project. The savings are calculated from the combined use of the classifier and rotating throats. This combination greatly improved throat life (conservatively, a 5 times life improvement).

Additional savings, not included in the calculations, can be expected due to the improved fineness and the subsequent decrease in LOI's. This would lead to additional sales of flyash due to lower levels of LOI.

A conservative 5 year economic life of the classifier has been used for the savings calculations.

~ 10 years.

COST ESTIMATE:

	2003-2004	2004-2005
Engineering Labor	$	$ 0
IPSC Labor	$ 115,200	$ 115,200
Contractor Labor	$ 0	$ 0
Material	$ 200,000	$ 200,000
Job Total	$ 315,200	$ 315,200

ALTERNATIVES:

EFFECT OF DEFERRAL: No improvement in fineness control.

PROJECT HISTORY: A single Alstom static classifier, will initially be purchased to confirm the viability of this component in our facility.

INTERMOUNTAIN POWER SERVICE CORPORATION

REQUISITION FOR CAPITAL EQUIPMENT

PURCHASE AUTHORIZATION FOR EXPENSE ITEMS

Date: November 3, 2003
Req./PA No:
P.O. No:
Vendor:
Terms:
FOB:
Ship Via:
Conf. To:

Purpose of Materials, Supplies or Services:

Alstom Static Classifier for Pulverizer Installation and Test.

Suggested Vendor: Alstom Inc
2000 Day Hill Road
Windsor, CT 06095-0500

Account No. SGX-402-102
Work Order No.
Project No.

Qty	Unit	Description Noun Adjective Catalog #	Seller or Manufacturer	Unit Cost	Extension
1	ea	Classifier, Alstom Static		$17,500.00	$17,500.00
		This is an adjustable classifier to improve			
		fineness control in the pulverizers. This			
		single unit is intended as a test component to			
		verify performance. If performance is adequate,			
		classifiers for all other mills will be purchased			
		with a subsequent requisition.			
		TOTAL ESTIMATED COST			$17,500.00

Remarks:

Delivery requested by [Date] 01-01-04 Originator Phil Hailes

Dept. Mgr/Supt. Date | Station Manager Date | Operating Agent Date

IP12_002671

CREW: 81 **WORK ORDER TYPE: MODIFICATIONS** **04-23048-0** **ISSUE DATE 11/10/03**

Originator : JILL GRIFFITHS
Planner : ALAN DEWSNUP
Drawing No : 1SGA-M2063D
Equip No/Cat: 1SGA--A 0
Project ID :
Shutdown : N No Shutdown
Ref No :

Schedule Date :
Priority : 3A
Clearance : NO
Tag Request :
Text ID :
Frequency : NOT SCHEDULED
Last Reading : No Reading

Date Completed: _____ Failure Code: _____

Completed By : _____ Signature : _____

Accepted By : _____ Signature : _____

**** Delay Codes Legend ****
W=Whse C=CrSp T=Tag TL=Tool P=Plan
**** Record Time Daily ****

Step	Job Scope	MN	DY	Safety and Additional Information
1	ENGINEERING WO TO EVALUATE ALSTOM STATIC CLASSIFIER AS MEANS IN MILL PERFORMANCE IMPROVEMENT. SYNOPSIS: EVALUATE COSTS AND PERFORMANCE ISSUES TO JUSTIFY ALSTOM STATIC CLASSIFIER FOR THE PULV'S. FOR ADDITIONAL INFORMATION CONTACT: PHIL HAILES DALE HURD ALAN DEWSNUP	1	1	

Emp No	Date	Hours	Delays Code/Hrs

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Job Feedback/Historical Notes:

04-23048-0 A

IP12_002672

Gentlemen,
Thanks very much for your time last Thursday. Attached is copy of the slide presentation for your files

(See attached file: Alstom Presentation 1-23-03.ppt)

I reviewed the performance of the MPS 89G with the data that was provided. Theoretically, the mill can grind 65 tons/hr at 48 HGI and 70% through 200. This assumes the mill is in good condition. As the coal gets harder and grindability drops, the mill capacity is reduced.

(Embedded image moved to file: pic09492.pcx)

Worn grinding components will further reduce the mill capacity.

This is the theoretical capacity. The MPS 89G is not a normal mill design and may not perform to the theoretical curves. It is an uprated MPS 89N. The air flow, tire size and table speed were increased. The table geometry was changed, but the table diameter was not increased. Table diameter is a primary factor in mill capacity so the MPS 89G is odd in this respect.

For reference, I have attached Alstom's capacity curves for the MPS 89G.

(See attached file: MPS89G Performance.xls)

Alstom will prepare a quotation for an Advanced Static Classifier. If there are any other questions or upgrades that you require, please don't hesitate to call or e-mail.

Regards
Peter
860 - 285 - 3249

From: <peter.l.stanwicks@power.alstom.com>
To: Phil Hailes <Phil-H@ipsc.com>
Date: 10/27/2003 2:38:42 PM
Subject: Re: IPP, Coal Down Spout 24"

Phil,

Thanks for the dimension. We'll proceed with that.

Peter

Phil Hailes <Phil-H@ipsc.com>

10/27/03 04:34 PM

To: Peter L. Stanwicks/USWIN01/Power/ALSTOM@GA
cc:
Subject: IPP, Coal Down Spout 24"

Peter,

The coal down spout in our MPS 89 mills is 24" ID. I measured it myself.

Phil

From: <peter.l.stanwicks@power.alstom.com>
To: <phil-h@ipsc.com>
Date: 9/29/2003 8:44:28 AM
Subject: Advanced Static Classifier Prototype Proposal

Attached is Alstom's latest proposal for the Advanced Static Classifier. We offer the prototype for no initial cost. If it performs according to predictions, Intermountain pays the introductory price for the first classifier. The details are provided in the attached proposal.

Due to the tight schedule, Alstom requests a reply by October 10. We started detail design in order to meet the delivery date.

We look forward to working with Intermountain Power on the project. If there are any questions regarding this proposal, please don't hesitate to call me (860-285-3249) or e-mail

Thanks
Peter

CC: <jim-n@ipsc.com>, <alan-d@ipsc.com>, <dale-h@ipsc.com>, <gary-j@ipsc.com>, <matt.pevarnik@power.alstom.com>, <frank.szela@power.alstom.com>, <steven.l.shumway@power.alstom.com>, <don.maurer@power.alstom.com>, <fred.hess@power.alstom.com>

From: <peter.l.stanwicks@power.alstom.com>
To: "Phil Hailes" <Phil-H@ipsc.com>
Date: 1/29/2003 7:52:44 AM
Subject: Re: Thanks

Phil,
Just to let you know, I sent about six papers on mill and classifier performance. I sent them regular mail so you should have them in about a week. They are from the Bureau of Mines, conferences and universities. They tend towards the theoretical side, but there is some useful stuff.

Steve has made arrangements to get you a Combustion Engineering book. It may take a couple weeks to get it shipped out.

Let me know if you don't get this stuff.

Any questions, just call or e-mail

Peter

From: <peter.l.stanwicks@power.alstom.com>
To: "Phil Hailes" <Phil-H@ipsc.com>, <Aaron-n@ipsc.com>, <jon-f@ipsc.com>, <alan-d@ipsc.com>
Date: 1/29/2003 7:39:44 AM
Subject: Mill Performance

Gentlemen,
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(Embedded image moved to file: pic09492.pcx)

Worn grinding components will further reduce the mill capacity.

This is the theoretical capacity. The MPS 89G is not a normal mill design and may not perform to the theoretical curves. It is an uprated MPS 89N. The air flow, tire size and table speed were increased. The table geometry was changed, but the table diameter was not increased. Table diameter is a primary factor in mill capacity so the MPS 89G is odd in this respect.

For reference, I have attached Alstom's capacity curves for the MPS 89G.

(See attached file: MPS89G Performance.xls)

Alstom will prepare a quotation for an Advanced Static Classifier. If there are any other questions or upgrades that you require, please don't hesitate to call or e-mail.

Regards
Peter
860 - 285 - 3249

CC: <steven.l.shumway@power.alstom.com>

From: <peter.l.stanwicks@power.alstom.com>
To: "Phil Hailes" <Phil-H@ipsc.com>
Date: 1/9/2003 8:25:02 AM
Subject: Re: Air Velocity Calculations

Hi Phil,

We use the simple flow equation

air mass flow = density x area x velocity

rearranging and solving for velocity

velocity = air mass flow/area/density

For air mass flow, we use the standard 255,000 lb/hr or 70.8 lb/s. If you have actual measured air mass flow, it can be used. We use the air density corrected for temperature. The density will be about 0.055 to .045 lb/ft3 depending on the inlet temperature.

The area is a little more complicated. We use the open area of the throat that is perpendicular to the flow. In other words, take a perpendicular from one vane to the next and that is the throat opening in that direction. Use the inside diameter and outside diameters to get the radial dimension of the port. Multiply the vane to vane dimension by the radial dimension to get the area of each port. Multiply each port area by the number of ports to get the total area. For your cast ports (part number 6012261), I calculate 7.51 ft2 for the total area

Using an air mass flow of 70.8 lb/s, an average density of 0.050 lb/ft3 and an area of 7.51 ft2, I get 188 ft/s velocity.

One thing that I thought of after our meeting is air flow. We talked about some mills wearing more quickly than others. Has the air flow control been checked lately? High velocity will wear parts exponentially. I was just at a plant where they found the air flow on some mills was 25-50% high.

Steve Shumway working with Alan to arrange another meeting on 1/23. We can discuss in more detail. If you have any questions before then, don't hesitate to e-mail or call

Regards
Peter
860-285-3249

From: <steven.l.shumway@power.alstom.com>
To: <jim-n@ipsc.com>
Date: 9/25/2003 10:42:04 AM
Subject: Advanced Static Classifiers

James,

Thank you for the time to meet on Tuesday. I have communicated our discussion to Peter Stanwicks and Company. To summarize our discussion, so we are all on the same page;

1. Alstom is to provide a proposal to you, for the supply, installation, and performance criteria of the Alstom Static Classifiers to most likely be installed into your "D" Mill. Alstom (Peter Stanwicks and Don Mauer) to negotiate an agreed contract.

2. IPSC desires equipment to be delivered to the plant site on or near the middle of November, 2003, with the intent to install the Classifier prior to the Thanksgiving Holidays.

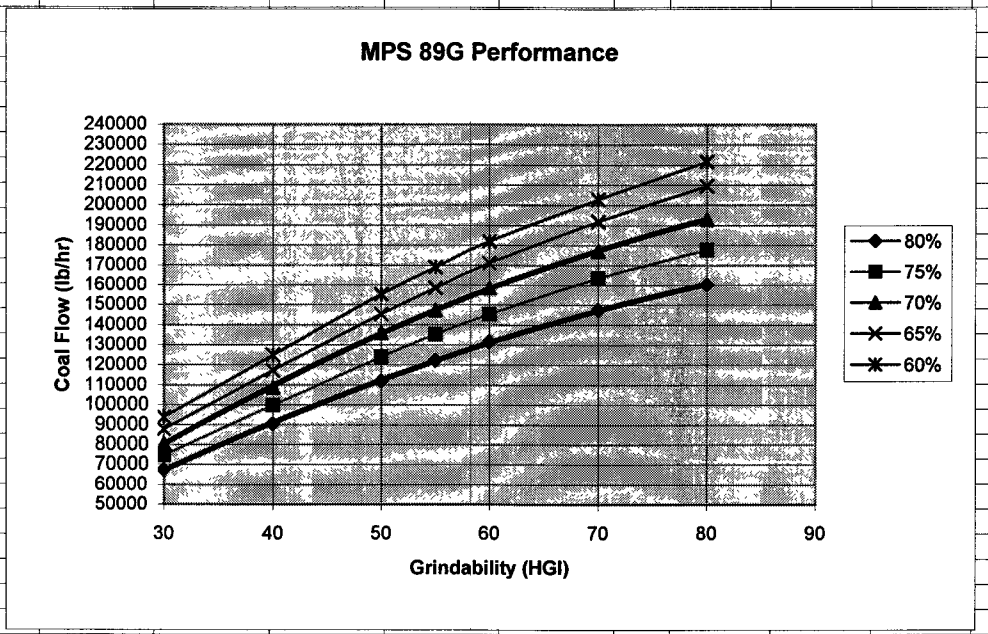
3. IPSC to monitor and document testing results throughout December/January timeframe (whatever is agreed upon). Compensation/settlement of payment will take place soon after the agreed testing period, and if successful, IPSC will pursue putting additional Alstom Classifiers into the 2004 budget.

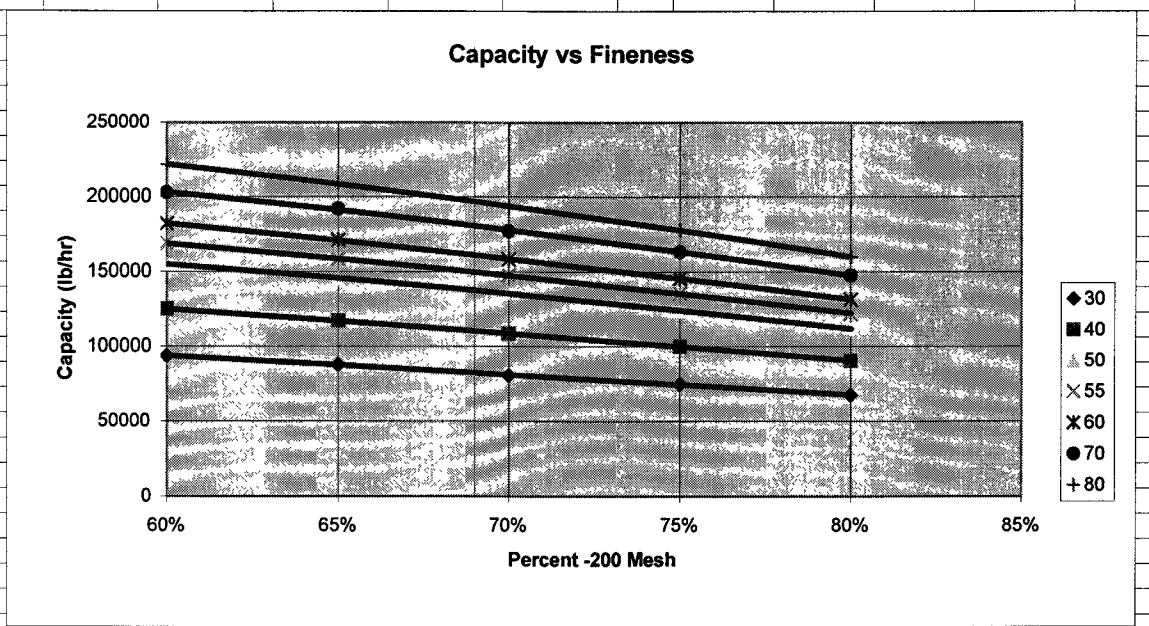
NOTE: As you are aware, this is an extremely agressive time table to achieve these goals. Our standard lead times for this equipment is 10-12 weeks. We are only 7 weeks from desired delivery date. Peter has already put things in motion in order to make this happen. The project negotiations between yourselves and Alstom will need to take place at an accelerated rate. Please call me if I can help, otherwise, I will step back while you and Peter get things worked out. Thank you again for this opportunity.

Steve Shumway

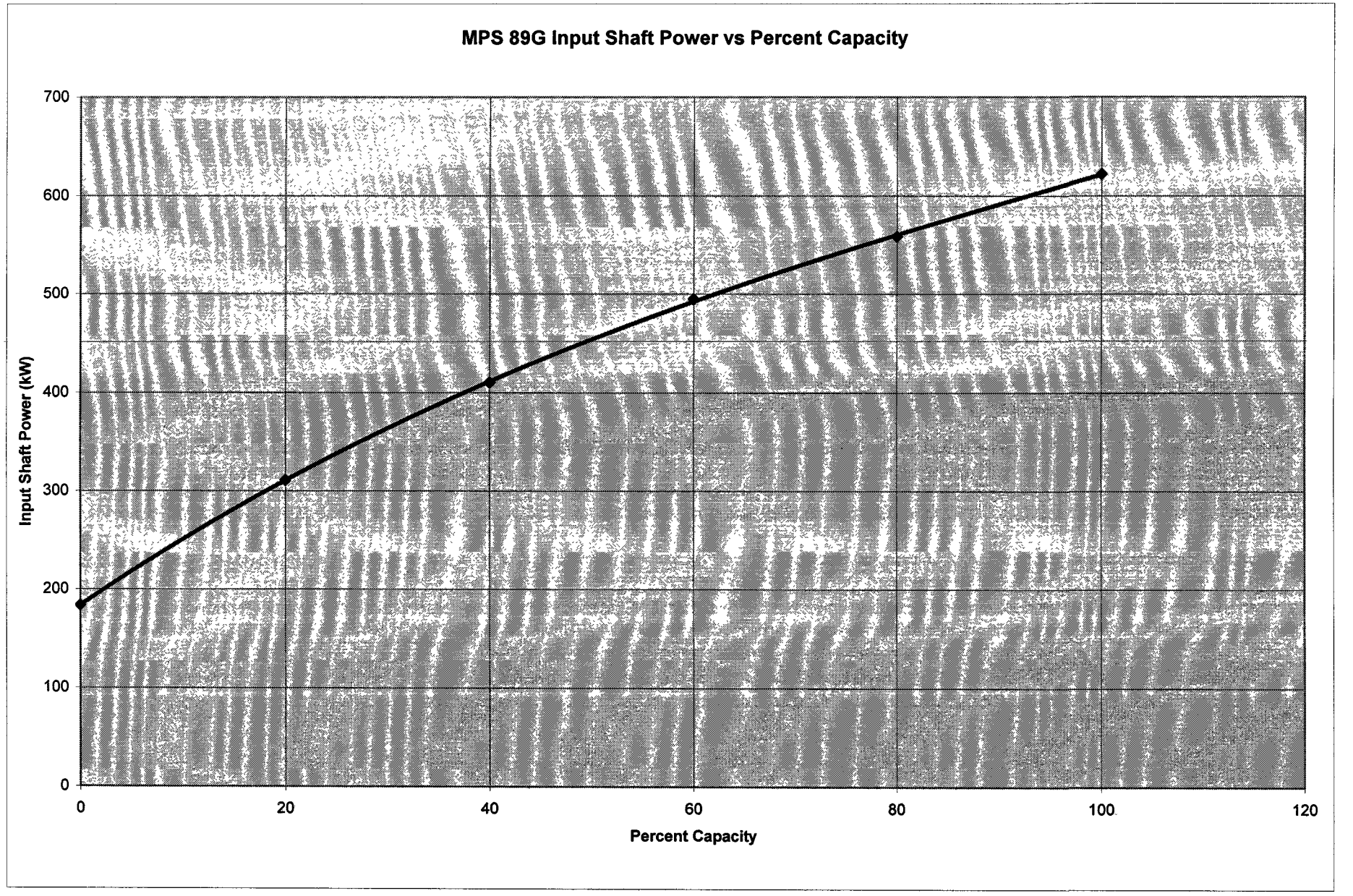
CC: <peter.l.stanwicks@power.alstom.com>, <don.maurer@power.alstom.com>, <matt.pevarnik@power.alstom.com>, <fred.hess@power.alstom.com>, <dale-h@ipsc.com>, <phil-h@ipsc.com>, <alan-d@ipsc.com>

	Capacity (lb/hr)						Capacity (T/hr)					
Grind	80%	75%	70%	65%	60%	Grind	80%	75%	70%	65%	60%
30	67452	74581	80613	87742	93774	30	33.7	37.3	40.3	43.9	46.9
40	90484	99806	108581	117355	125032	40	45.2	49.9	54.3	58.7	62.5
50	111871	123935	136000	145323	155194	50	55.9	62.0	68.0	72.7	77.6
55	122290	135452	147516	158484	168903	55	61.1	67.7	73.8	79.2	84.5
60	131613	145323	158484	171097	182065	60	65.8	72.7	79.2	85.5	91.0
70	147516	163419	177129	191935	202903	70	73.8	81.7	88.6	96.0	101.5
80	160129	177677	193032	209484	221548	80	80.1	88.8	96.5	104.7	110.8

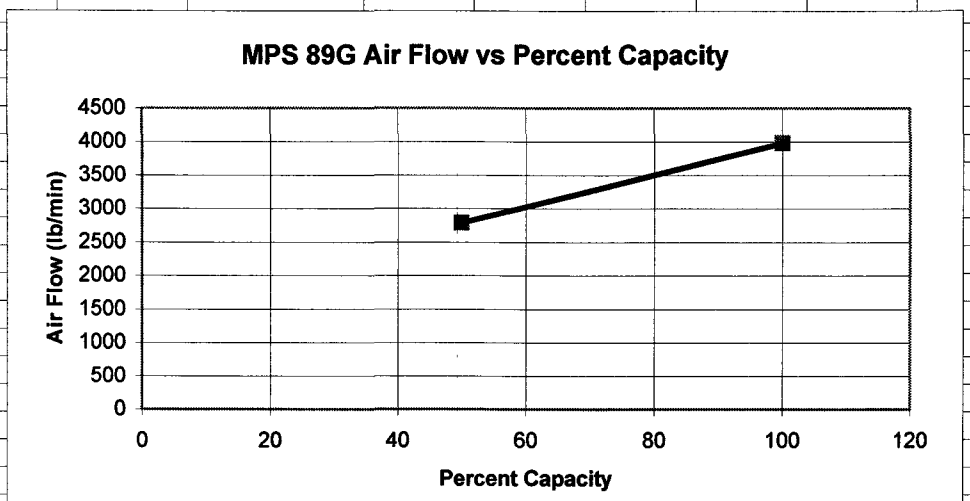




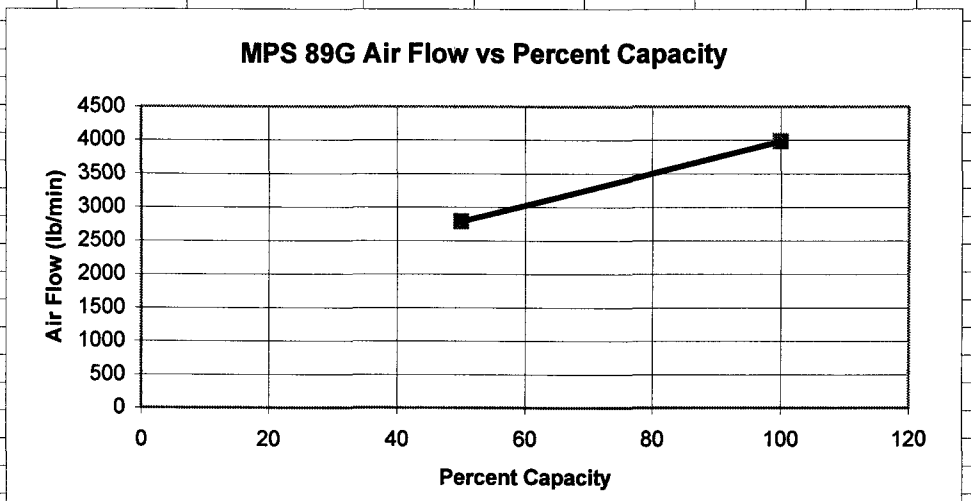
Received from Peter Stanwicks, Alstom Pwer, Windsor, CT 860-285-3249


MPS 89G Input Shaft Power vs Percent Capacity
Input Shaft Power (kW)
700
600
500
400
300
200
100
0
0
20
40
60
80
100
120
Percent Capacity

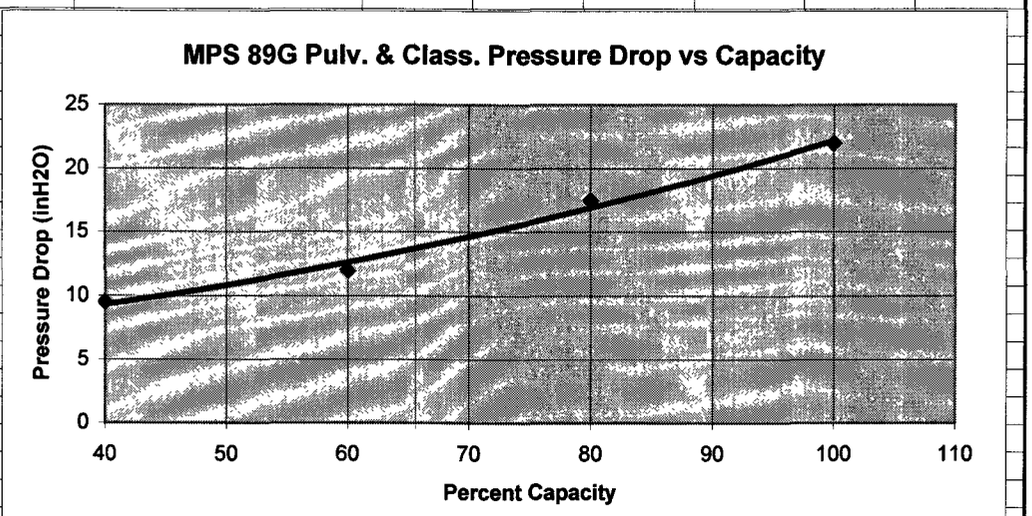
Percent Capacity	Air Flow (lb/min)
50	2789
100	3984



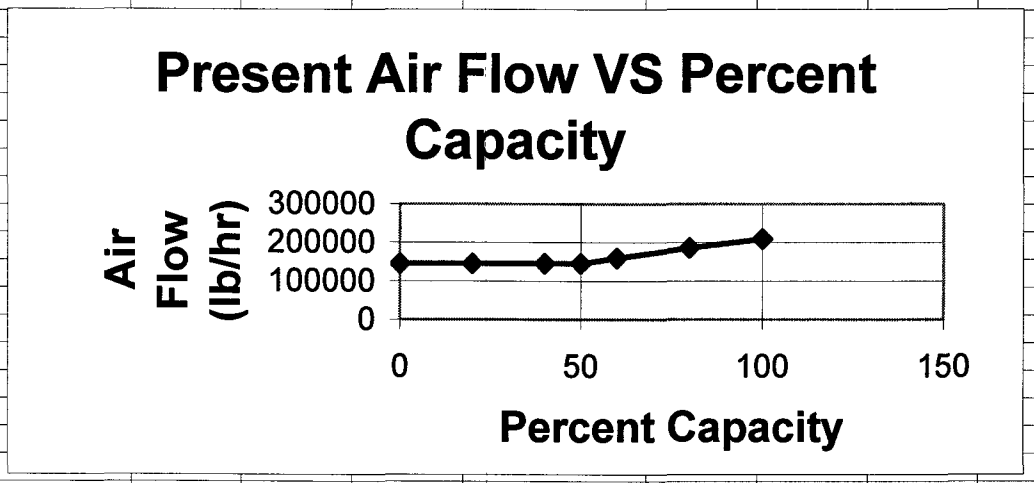
Percent Capacity	Air Flow (lb/min)
50	2789
100	3984

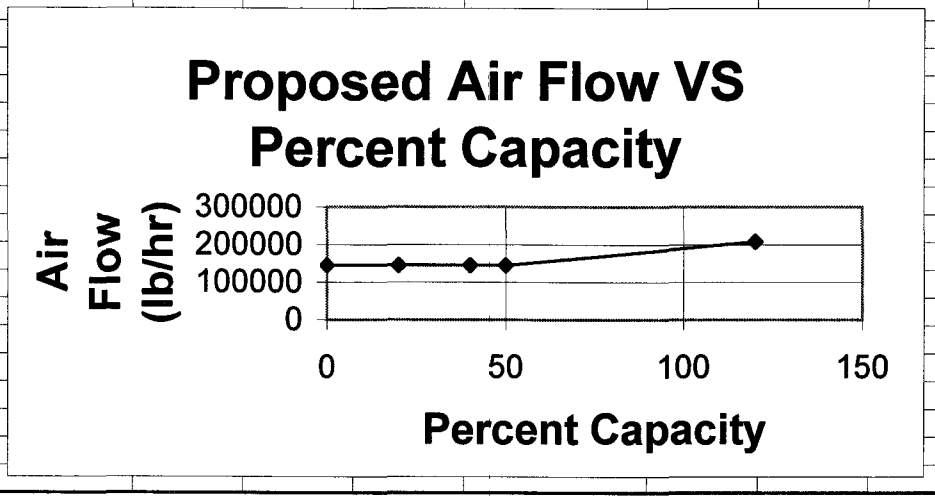


Percent Capacity	Pulv. & Classifier dP (in H2O)
40	9.5
60	12
80	17.5
100	22



Percent Capacity	Air Flow (1	Air Flow (lb/hr)		Percent Capacity	Air Flow (lb/hr)
0	39000	145080		0	145080
20	39000	145080		20	145080
40	39000	145080		40	145080
50	39000	145080		50	145080
60	43000	159960		120	209000
80	50000	186000			
100	56000	208320			
120					





JOB NO: IGS04 W.O. # 23048

TITLE: Alstom Static Classifier and Coal Feed Tube Extensions for (16) MPS 89 Mills

DESCRIPTION: Purchase and install adjustable static classifiers and coal feed tube extensions for all of the pulverizers.

JUSTIFICATION: ECONOMIC

RATE OF RETURN:	17 %
PAYBACK PERIOD:	5.2 years
BENEFIT/COST RATIO:	1.6
ECONOMIC LIFE:	10 years
PV SAVINGS:	$486,401
SALVAGE VALUE:	$0

ADDITIONAL DETAIL:

This project consists of installation of and adjustable static classifier and coal feed tube extension.

The adjustability of the static classifier will provide for improved fineness control. In conjunction with the use of rotating throats, it is expected that mill component life will likewise improve with the improved fineness control.

The expected savings from the improved life of mill throats has been used to justify this project. The savings are calculated from the combined use of the classifier and rotating throats. This combination greatly improved throat life (conservatively, a 5 times life improvement). The use of the classifier is necessitated because of the improved fineness needed with use of the rotating throats.

Additional savings can be expected due to the improved fineness and the consequential decrease in LOI's. This would lead to additional sales of flyash due to lower levels of LOI.

The coal feed tube extensions incorporate an extension of the feed tube and the pulverizer classifier down spouts. This will eliminate the need for the swing gates within the pulverizer. This will prevent the decreased fineness that occurs when the swing gates are caught in the open position, or otherwise fail.

This justification is based upon eliminating a scenario (stuck or missing swing gates) that causes decreased fineness and subsequent increased LOI's. The costs were determined from the lost sales of flyash, due to the higher levels of LOI.

A 10- year economic life for the classifier and feed tube has been used for the calculations.

COST ESTIMATE:

	2003-2004	2004-2005
Engineering Labor	$ 5,000	$ 0
IPSC Labor	$ 165,200	$ 165,200
Contractor Labor	$ 0	$ 0
Material	$ 240,000	$ 240,000
Job Total	$ 410,200	$ 405,200

ALTERNATIVES:

EFFECT OF DEFERRAL: No improvement in fineness control and occasional LOI excursions.

PROJECT HISTORY: A single Alstom static classifier and coal feed tube extension, will initially be purchased to confirm the viability of these components in our facility.

IGS04 - XXX Alstom Static Classifier
Economic Justification Calculations

Summary

PV of Project Savings	$486,401
Benefit/Cost Ratio	1.60
Payback Period (YRS)	5.20
Total Return	60%
Internal Rate of Return	17%

Initial Capital Expenditures w/Project (-$)	$ (815,400)	*This is the cost of completing the capital project. Outgoing money is negative.*
Initial Capital Savings w/Project (+$)	$ -	*This is the immediate (Time = 0) savings that the capital project will create. Incoming (i.e. saved) money is positive.*
Total Initial Capital Savings (or Costs) w/Project (+/-$)	$ (815,400)	*This is the net gain/loss of money at Time = 0, if the capital project is completed.*
Annual Expected Maintenance Expenses w/Project (-$)	$ (48,000)	*This is the annual maintenance costs that are expected after the capital project is completed.*
Annual Maintenance/Operations Expenses w/o Project (-$)	$ (204,800)	*This is the annual maintenance costs that are occuring without the capital project.*
Annual Maintenance Savings (or Costs) w/Project (+/-$)	$ 156,800	*This is the annual net gain or loss of money if the project is completed.*
O & M Escalation (%)	3	
Cost of Capital (%)	6.04	

Breakdown of the Values Used in the Above Calculations

Initial Capital Expenditures w/Project
Static Classifier

Engineering Labor	$ -	
IPSC Labor	$ 230,400	$14,400 = (3 weeks)(3 men)($40/hr) Labor to install. (x 16 mills)
Contract Labor	$ -	
Material	$ 400,000	$25,000 Stated cost of (1) classifier by Alstom. (x 16 mills)
Total	$ 630,400	

Feed Tube Extension

Engineering Labor	$ 5,000	
IPSC Labor	$ 100,000	$6,250 est labor to install. (x16 mills)
Contract Labor	$ -	
Material	$ 80,000	$5,000 Stated cost of (1) feed tube. (x 16 mills)
Total	$ 185,000	

Initial Capital Savings w/Project
None Determined $ -

$ 815,400

Annual Expected Maintenance Expenses w/Project (-$)

$ 48,000 — Estimate at $3,000 per mill per yr to maintain the classifier. $3,000 x 16 Mills = $48,000

$ 48,000

Annual Maintenance/Operations Expenses w/o Project (-$)

Reduced throat wear savings $ 60,800 — $30,400 = 4($57,000)/7.5 ; $57,000 = $30,000 + $27,000. $30,000 is general throat cost. $27,000 is estimated labor cost to install a new throat. 4 is the est. number of saved throat changeouts per unit in a 7.5 year period. This drives to an annual savings of $30,400 in throat changeouts per unit. 2($30,400) = $60,800

Lost Flyash Sales (Excess LOI) $ 144,000 — Monthly occurrence on each unit:(2 units) (12 months) (400 tons/day)($5/ton) (3 days per month excursion and to discover and repair stuck gates) = $144,000

Downtime Saved
Not Determined $ -

$ 204,800

	Time Period	Capital	PV Capital	Annual Maint Savings w/Esc	PV Maint Costs
Capital at Time = 0	0	$ (815,400)	$ (815,400)		
	1			$ 156,800	$ 147,869
	2			$ 161,504	$ 143,630
	3			$ 166,349	$ 139,512
	4			$ 171,340	$ 135,512
	5			$ 176,480	$ 131,627
	6			$ 181,774	$ 127,854
	7			$ 187,227	$ 124,188
	8			$ 192,844	$ 120,628
	9			$ 198,630	$ 117,170
10 Year Life of Project	10			$ 204,588	$ 113,811
Present Value Totals		-	$ (815,400)	-	$ 1,301,801

Internal Rate of Return	17%
Guess	5

JOB NO: IGS04 W.O. # 23048

TITLE: Alstom Static Classifier and Coal Feed Tube Extensions for (16) MPS 89 Mills

DESCRIPTION: Purchase and install adjustable static classifiers and coal feed tube extensions for all of the pulverizers.

JUSTIFICATION: ECONOMIC

RATE OF RETURN:	17 %
PAYBACK PERIOD:	5.2 years
BENEFIT/COST RATIO:	1.6
ECONOMIC LIFE:	10 years
PV SAVINGS:	$486,401
SALVAGE VALUE:	$0

ADDITIONAL DETAIL:

This project consists of installation of and adjustable static classifier and coal feed tube extension.

The adjustability of the static classifier will provide for improved fineness control. In conjunction with the use of rotating throats, it is expected that mill component life will likewise improve with the improved fineness control.

The expected savings from the improved life of mill throats has been used to justify this project. The savings are calculated from the combined use of the classifier and rotating throats. This combination greatly improved throat life (conservatively, a 5 times life improvement). The use of the classifier is necessitated because of the improved fineness needed with use of the rotating throats.

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This justification is based upon eliminating a scenario (stuck or missing swing gates) that causes decreased fineness and subsequent increased LOI's. The costs were determined from the lost sales of flyash, due to the higher levels of LOI.

A 10- year economic life for the classifier and feed tube has been used for the calculations.

COST ESTIMATE:

	2003-2004	2004-2005
Engineering Labor	$ 5,000	$ 0
IPSC Labor	$ 165,200	$ 165,200
Contractor Labor	$ 0	$ 0
Material	$ 240,000	$ 240,000
Job Total	$ 410,200	$ 405,200

ALTERNATIVES:

EFFECT OF DEFERRAL: No improvement in fineness control and occasional LOI excursions.

PROJECT HISTORY: A single Alstom static classifier and coal feed tube extension, will initially be purchased to confirm the viability of these components in our facility.

IGS04 - XXX Alstom Static Classifier
Economic Justification Calculations

Summary

PV of Project Savings	$486,401
Benefit/Cost Ratio	1.60
Payback Period (YRS)	5.20
Total Return	60%
Internal Rate of Return	17%

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Total Initial Capital Savings (or Costs) w/Project (+/-$)	$ (815,400)	*This is the net gain/loss of money at Time = 0, if the capital project is completed.*
Annual Expected Maintenance Expenses w/Project (-$)	$ (48,000)	*This is the annual maintenance costs that are expected after the capital project is completed.*
Annual Maintenance/Operations Expenses w/o Project (-$)	$ (204,800)	*This is the annual maintenance costs that are occuring without the capital project.*
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O & M Escalation (%)	3	
Cost of Capital (%)	6.04	

Breakdown of the Values Used in the Above Calculations

Initial Capital Expenditures w/Project
Static Classifier

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Total	$ 630,400	

Feed Tube Extension

Engineering Labor	$ 5,000	
IPSC Labor	$ 100,000	$6,250 est labor to install. (x16 mills)
Contract Labor	$ -	
Material	$ 80,000	$5,000 Stated cost of (1) feed tube. (x 16 mills)
Total	$ 185,000	

Initial Capital Savings w/Project
None Determined $ -

$ 815,400

Annual Expected Maintenance Expenses w/Project (-$)

$ 48,000 — Estimate at $3,000 per mill per yr to maintain the classifier. $3,000 x 16 Mills = $48,000

$ 48,000

Annual Maintenance/Operations Expenses w/o Project (-$)

Reduced throat wear savings $ 60,800 — $30,400 = 4($57,000)/7.5 ; $57,000 = $30,000 + $27,000. $30,000 is general throat cost. $27,000 is estimated labor cost to install a new throat. 4 is the est. number of saved throat changeouts per unit in a 7.5 year period. This drives to an annual savings of $30,400 in throat changeouts per unit. 2($30,400) = $60,800

Lost Flyash Sales (Excess LOI) $ 144,000 — Monthly occurrence on each unit:(2 units) (12 months) (400 tons/day)($5/ton) (3 days per month excursion and to discover and repair stuck gates) = $144,000

Downtime Saved
Not Determined $ -

$ 204,800

	Time Period	Capital	PV Capital	Annual Maint Savings w/Esc	PV Maint Costs
Capital at Time = 0	0	$ (815,400)	$ (815,400)		
	1			$ 156,800	$ 147,869
	2			$ 161,504	$ 143,630
	3			$ 166,349	$ 139,512
	4			$ 171,340	$ 135,512
	5			$ 176,480	$ 131,627
	6			$ 181,774	$ 127,854
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	9			$ 198,630	$ 117,170
10 Year Life of Project	10			$ 204,588	$ 113,811
Present Value Totals		-	$ (815,400)	-	$ 1,301,801

Internal Rate of Return	17%
Guess	5

From: <steven.l.shumway@power.alstom.com>
To: <phil-h@ipsc.com>
Date: 5/3/2004 3:36:24 PM
Subject: Visit

Phil,

Sorry I missed you during my visit last week. We tried to track you down but, oh well. I needed to follow up on a couple of items;

1. Do you still have some interest in a new coal shutoff/control valve from Alstom. We had talked about this at one time but never did pursue. This would be for your 22" OD coal pipe.

2. Classifier update. We have an installation list of where we have installed this classifier on CE mills with test data results. I spoke to Peter Stanwicks just recently and he indicated that they are working with another customer back east, I believe, in putting in a test classifier on an MPS 89 mill. Peter said he didn't know if we wanted to support two tests simultaneously if you were to decide to pursue. I wonder if it would hurt to have an East test and a West test using different coals and operating conditions. Do you guys still want to pursue a test? If the classifier is installed as a regular maintenance item (replacing worn existing classifier) the cost would be very minimal. We will pursue if you have the desire. I will have to do some talking to get Peter to go along with two test sites. Let me know your thoughts.

Steve Shumway, Alstom
801-573-7297

CC: <aaron-n@ipsc.com>, <jim-n@ipsc.com>, <alan-d@ipsc.com>

JOB NO: IGS03 W.O. # 23048

TITLE: Alstom Static Classifier for MPS 89 Mills

DESCRIPTION: Purchase and install adjustable static classifiers for all of the pulverizers.

JUSTIFICATION: ECONOMIC

RATE OF RETURN:	75 %
PAYBACK PERIOD:	1.3 years
BENEFIT/COST RATIO:	3.44
ECONOMIC LIFE:	5 years
PV SAVINGS:	$1,535,290
SALVAGE VALUE:	$0

ADDITIONAL DETAIL:

The adjustability of the static classifier will provided for improved fineness control. In conjunction with the use of rotating throats, it is expected that mill component life will likewise improve with the improved fineness control.

The expected savings alone from the improved life of mill throats can be used to justify this project. The savings are calculated from the combined use of the classifier and rotating throats. This combination greatly improved throat life (conservatively, a 5 times life improvement).

Additional savings, not included in the calculations, can be expected due to the improved fineness and the subsequent decrease in LOI's. This would lead to additional sales of flyash due to lower levels of LOI.

A conservative 5 year economic life of the classifier has been used for the savings calculations.

$391,300

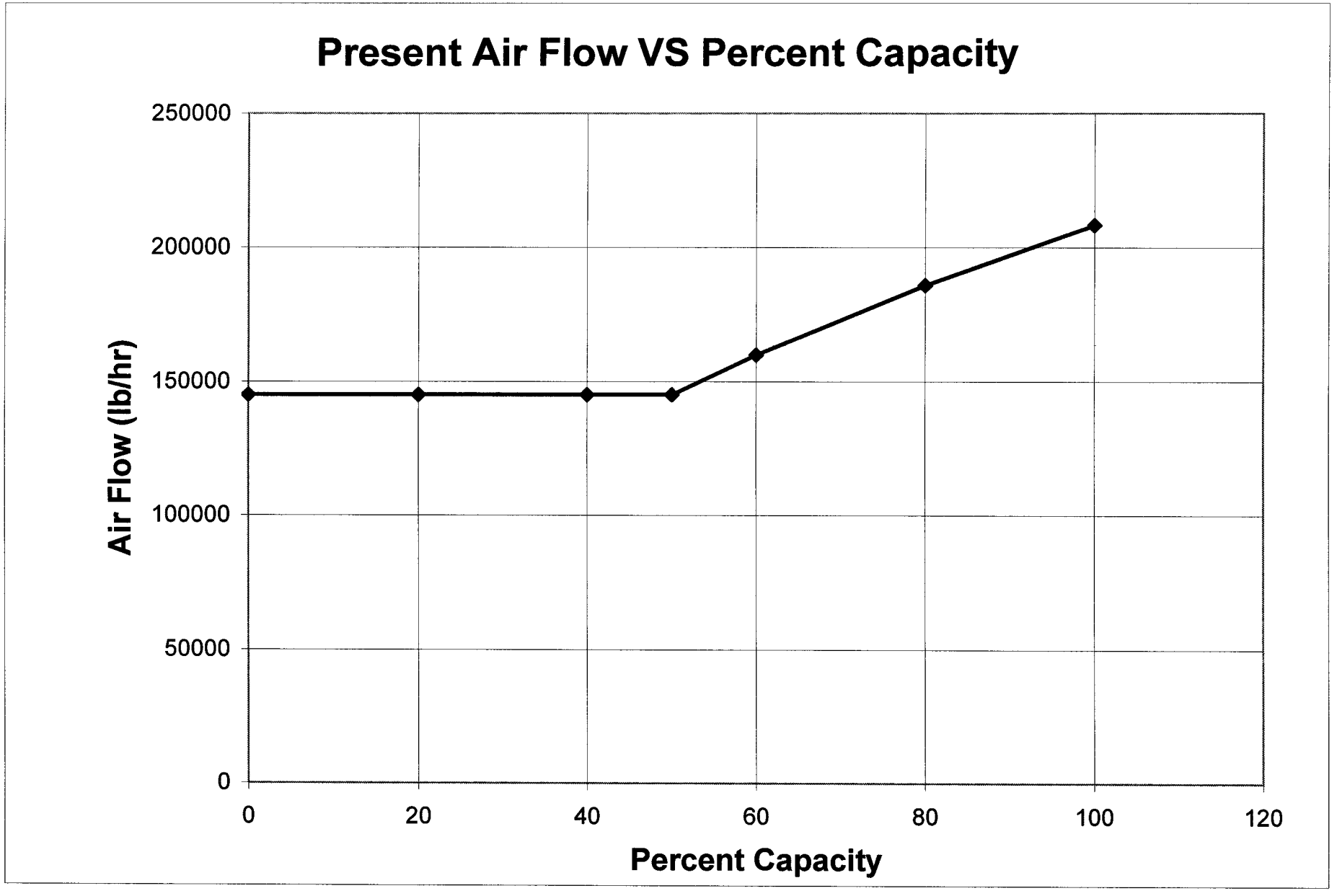
COST ESTIMATE:

	2003-2004	2004-2005
Engineering Labor	$	$ 0
IPSC Labor	$ 115,200	$ 115,200
Contractor Labor	$ 0	$ 0
Material	$ 200,000	$ 200,000
Job Total	$ 315,200	$ 315,200

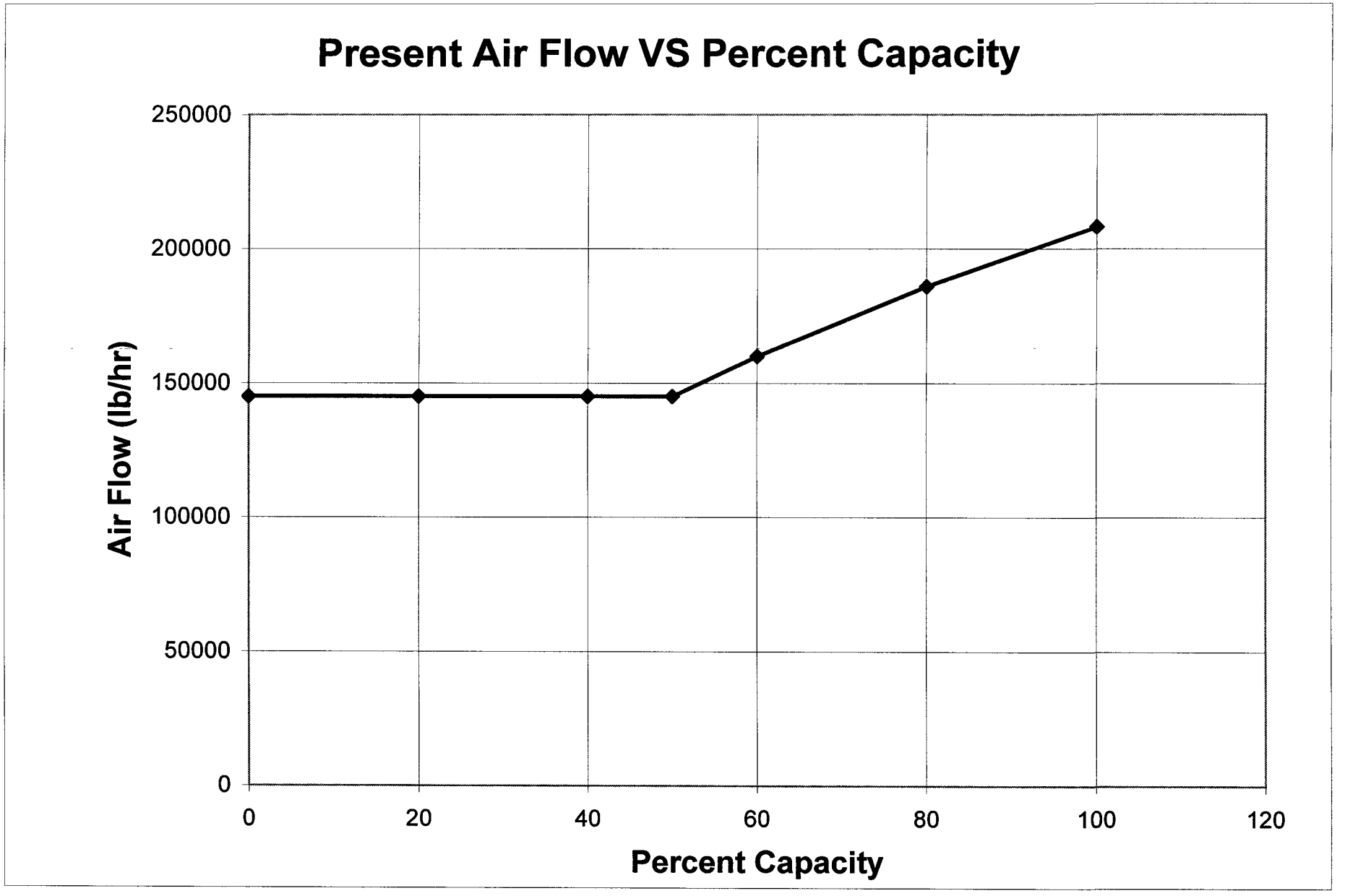
ALTERNATIVES:

EFFECT OF DEFERRAL: No improvement in fineness control.

PROJECT HISTORY: A single Alstom static classifier, will initially be purchased to confirm the viability of this component in our facility.

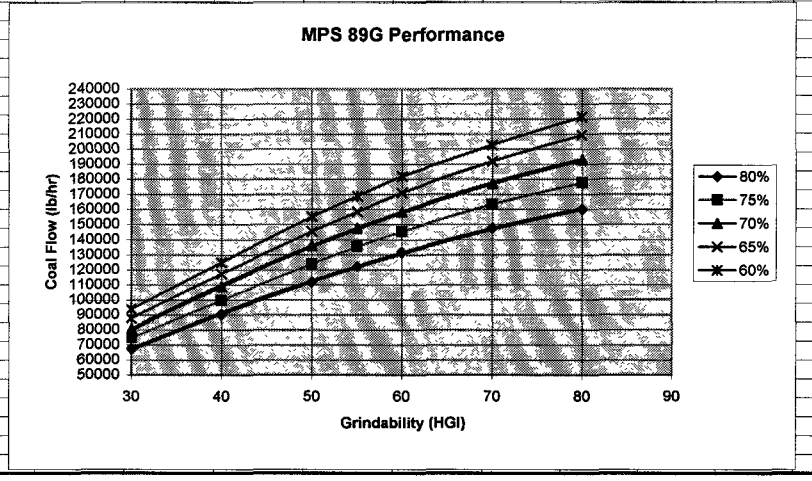

Present Air Flow VS Percent Capacity
250000
200000
150000
100000
50000
0
Air Flow (lb/hr)
0
20
40
60
80
100
120
Percent Capacity

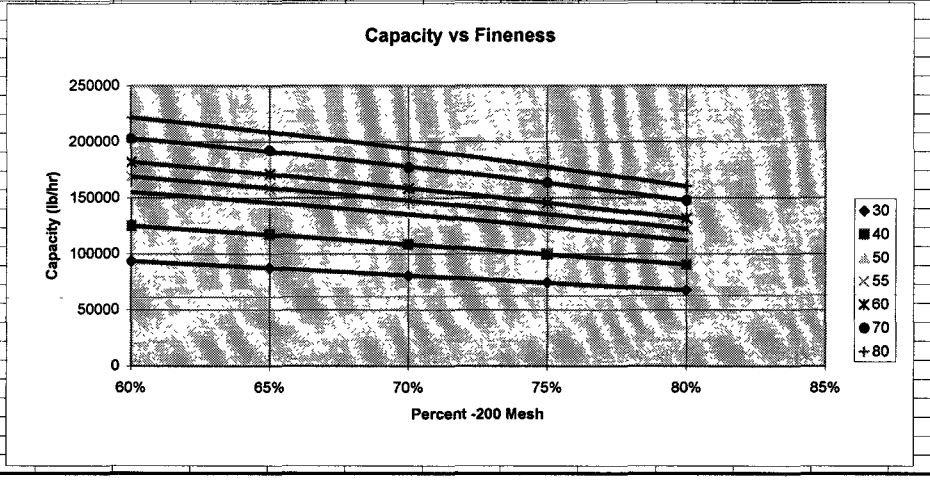
IP12_002695


Present Air Flow VS Percent Capacity
250000
200000
150000
100000
50000
0
Air Flow (lb/hr)
0
20
40
60
80
100
120
Percent Capacity

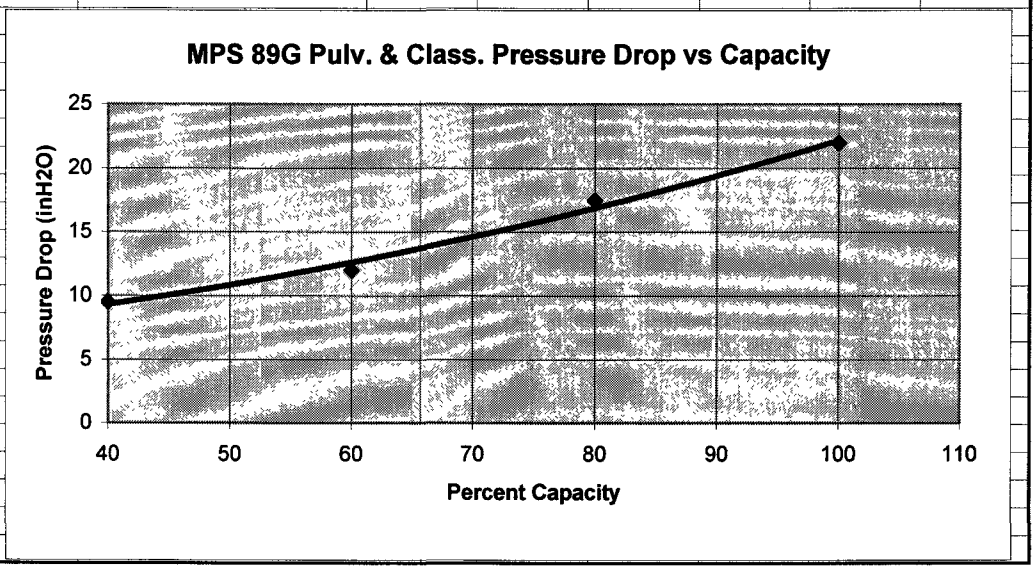
	Capacity (lb/hr)				
Grind	80%	75%	70%	65%	60%
30	67452	74581	80613	87742	93774
40	90484	99806	108581	117355	125032
50	111871	123935	136000	145323	155194
55	122290	135452	147516	158484	168903
60	131613	145323	158484	171097	182065
70	147516	163419	177129	191935	202903
80	160129	177677	193032	209484	221548

	Capacity (T/hr)				
Grind	80%	75%	70%	65%	60%
30	33 7	37 3	40 3	43 9	46 9
40	45 2	49 9	54 3	58 7	62 5
50	55 9	62 0	68 0	72 7	77 6
55	61 1	67 7	73 8	79 2	84 5
60	65 8	72 7	79 2	85 5	91 0
70	73 8	81 7	88 6	96 0	101 5
80	80 1	88 8	96 5	104 7	110 8

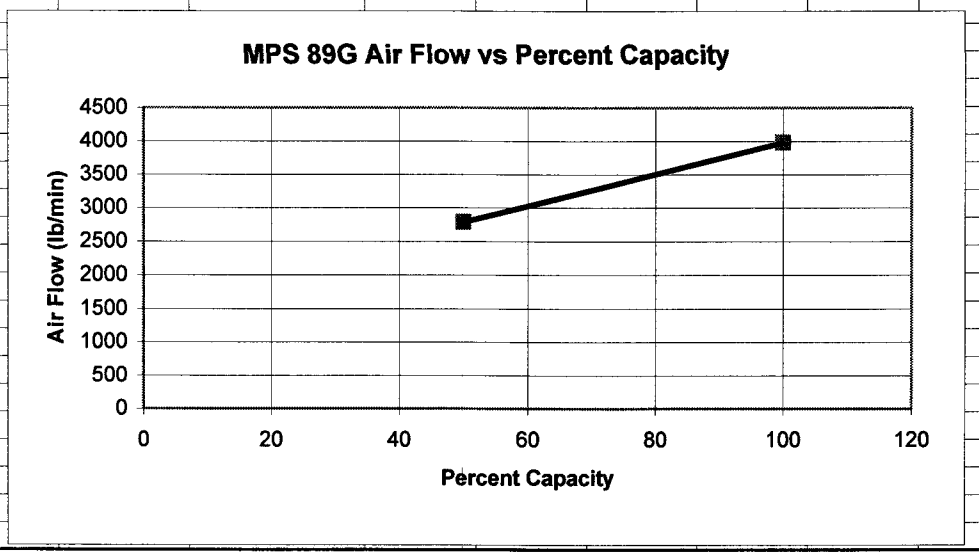




Percent Capacity	Pulv. & Classifier dP (in H2O)
40	9.5
60	12
80	17.5
100	22



Percent Capacity	Air Flow (lb/min)
50	2789
100	3984



@PJL SET ECONOMODE=OFF
@PJL SET RET=ON
@PJL SET RESOLUTION=600
@PJL ENTER LAN

From: <steven.l.shumway@power.alstom.com>
To: <dale-h@ipsc.com>, <bob-a@ipsc.com>, <alan-d@ipsc.com>, <phil-h@ipsc.com>, <james-n@ipsc.com>, <ralph-n@ipsc.com>, <albert.a.reckman@power.alstom.com>, <matt.pevarnik@power.alstom.com>, <peter.l.stanwicks@power.alstom.com>, <fred.hess@power.alstom.com>
Date: 12/4/2002 3:34:48 PM
Subject: IPSC Technical Issues

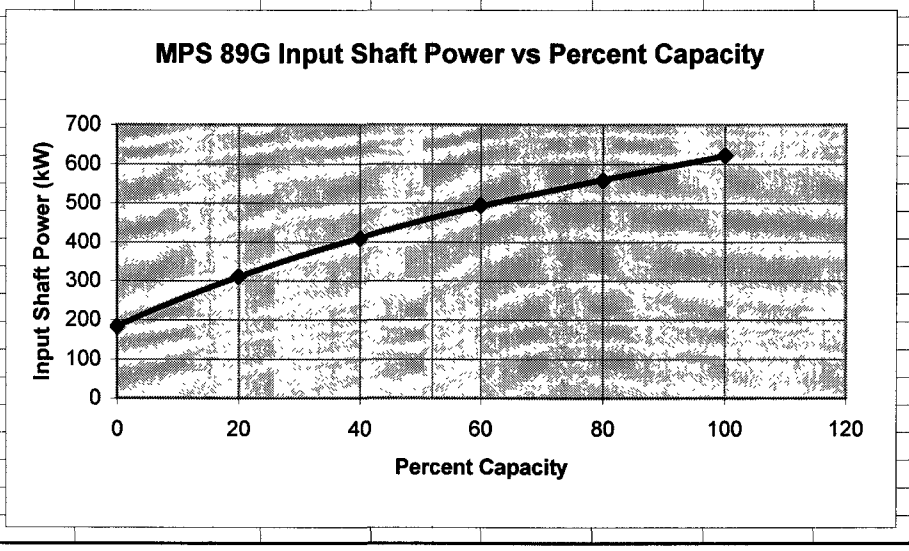
Ralph and All,

I just got off the phone with Peter Stanwicks, our MPS Mill Engineer Specialist at Alstom's corporate headquarters. As you know, we have been addressing a few different issues regarding your MPS 89 Mills. First is an issue of increased wear in your upper throat segments and possibly other areas. Secondly, is the Alstom rotating throat currently being tested. We feel that these issues are "close to the surface" and need to be addressed ASAP. Peter would very much like to come out to your plant and sit down to a technical meeting with those concerned to see if we can begin to resolve some of these issues. There are some additional thoughts pertaining to the rotating throats and ideas that we would like to talk about in addition to doing more research into the unusual wear. Peter recently sent out a letter to you requesting a little more info on the wear to help us better understand what may be happening. Peter has an open schedule for the next couple of weeks and would like to come out sometime prior to the Holidays. Can we get something put together? Give me some dates to consider and we'll get things set up. Alstom is very interested in helping IPP achieve the most optimal operation possible. Thanks for your help and feel free to call me at 801-573-7297.

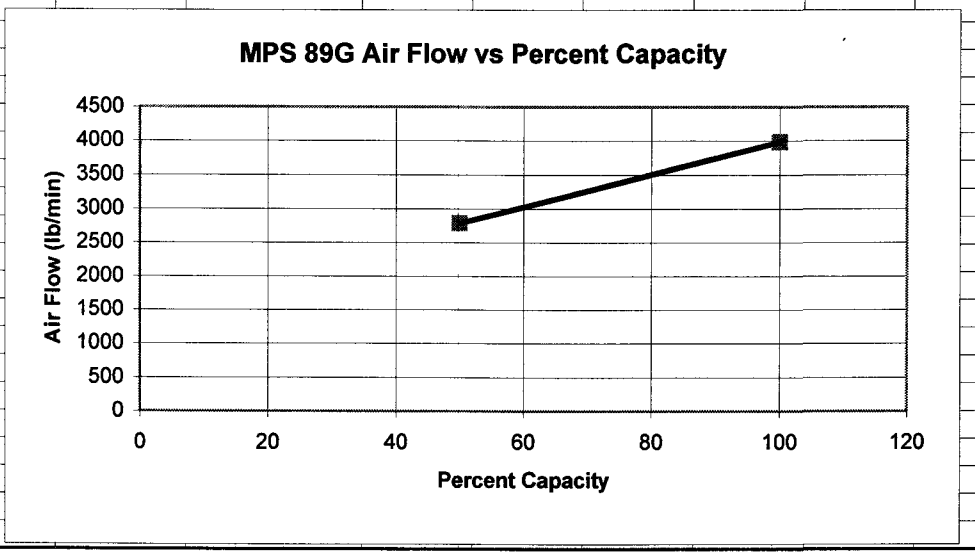
Regards,

Steve Shumway, Alstom Power

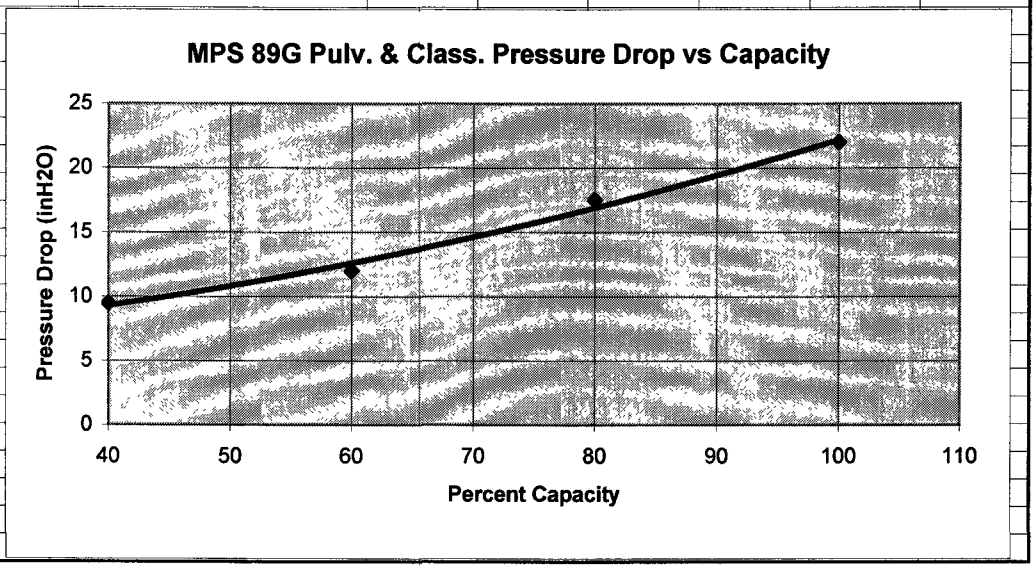
Percent Output	Input Power (kW)
0	184
20	311
40	410
60	495
80	558
100	622



Percent Capacity	Air Flow (lb/min)
50	2789
100	3984

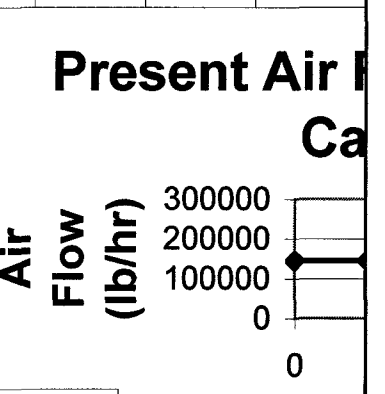


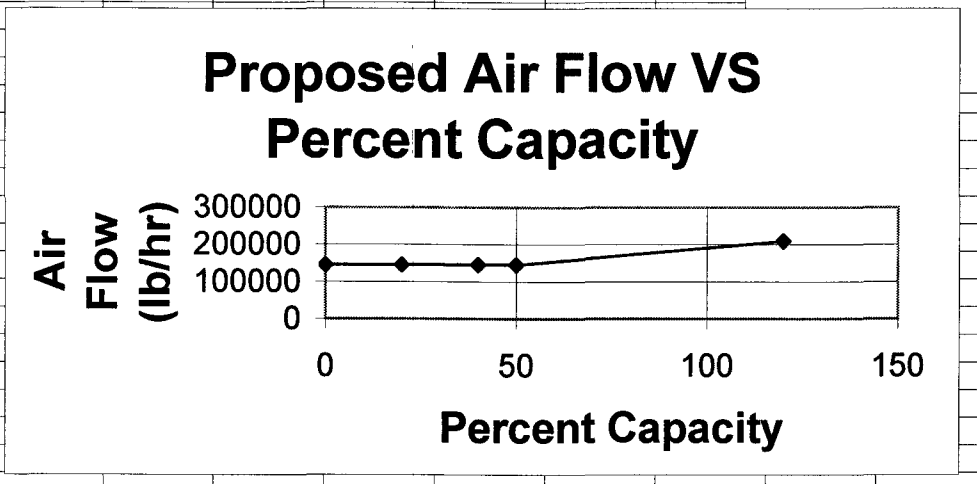
Percent Capacity	Pulv. & Classifier dP (in H2O)
40	9.5
60	12
80	17.5
100	22

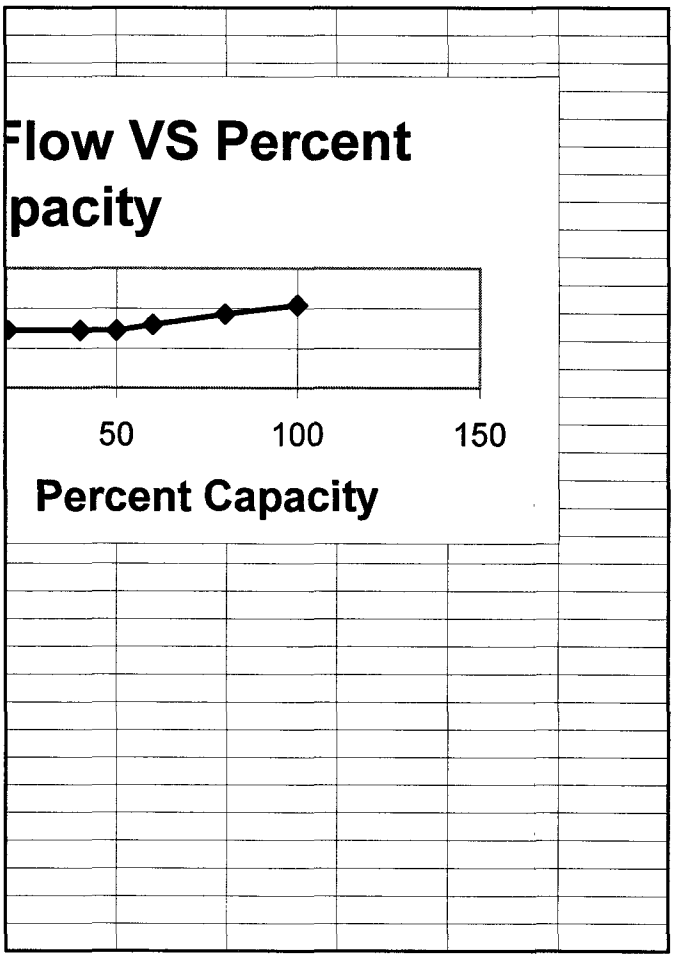


Percent Ca	Air Flow (1	Air Flow (lb/hr)
0	39000	145080
20	39000	145080
40	39000	145080
50	39000	145080
60	43000	159960
80	50000	186000
100	56000	208320
120		

Percent Ca	Air Flow (lb/hr)
0	145080
20	145080
40	145080
50	145080
120	209000






Flow VS Percent
pacity
50
100
150
Percent Capacity